

# Loops

## Table of Contents

Loops.....	1
While loop.....	1
Do while loop .....	1
For loop .....	2
Exercises.....	3

## Loops

A loop lets you run the same section of code over and over again until a specific condition is met.

There are 4 types of loops in PHP:

- While
- Do ... while
- For
- Foreach – we will look at this one later

### While loop

Example:

```
<?php
$loopCounter = 1;

while ($loopCounter <= 10)
{
    echo "$loopCounter <br>";
    $loopCounter++;
}

echo "The end of the loop and the loop counter is = $loopCounter";
?>
```

The expression inside the parentheses is tested; if it evaluates to true, the code block inside the braces is executed. If it is evaluated to false the loop ends.

### Do while loop

The do while loop is similar to the while loop. The main difference is that with a do while loop the condition is checked at the end of the loop instead of at the start. So if the condition check is evaluated to false it will execute the loop at least once.

```
<?php
$loopCounter = 11;

do
{
    echo "$loopCounter <br>";
    $loopCounter++;
} while($loopCounter <=10);

echo "The end of the loop and the loop counter is = $loopCounter";
?>
```

In the above code the loop will execute once then the condition will be checked and the loop will end.

## For loop

### Example

```
for($i = 1; $i <=10; $i++)  
{  
    echo "$i <br>";  
}
```

```
echo "The end of the loop and the loop counter is = $i";
```

for - Identifies that this will be a for loop.

\$i=1; - A variable called "i" is created of type integer and initialised to the value

1. This tells the loop where to start (1).

\$i <= 10; - Keep looping as long as i is less than or equal to 10

\$i++ - each time you loop increment i by 1. i++ is the same as i = i + 1

The statements to be repeated are then enclosed in curly braces {}

Most of the time when we loop we want to increment by 1 but sometimes we may want to count backwards by one or up by 2 etc. To achieve this we just need to change the increment section. To go backwards use \$i--; to go up by another value than 1 use \$i=\$i+2;

### Activity 1. Loops

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Q1. Using a for loop display numbers from 1 through to 10

Q2. Change the above code so that it starts at 0 and ends at 7

Q3. Using a for loop display numbers from 10 down to 1

Q4. Using a for loop display even numbers from 2 to 10

Q5. Use a while loop to display numbers from 1 to 7

Q6. Use a do while loop to display numbers from 1 to 7

### Activity 2. While loop with an if statement

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In this exercise we will keep generating a random number between 1 and 10 until we get a 10.

```
1 <!DOCTYPE html>  
2 <html lang="en">  
3 <head>  
4     <meta charset="utf-8">  
5     <title>Random if statement</title>  
6 </head>  
7 <body>  
8 <?php  
9     //start with a value of 0  
10    $number = 0;  
11  
12    while($number != 10)  
13    {  
14        //use the rand function to generate a random number between 1 and 10  
15        $number = rand(1, 10);  
16  
17        //display to the user the random number  
18        echo "<p>Random number is " . $number . "</p>";  
19  
20        //if it is a 10 they are a winner  
21        if ($number == 10)  
22        {  
23            echo "<p>Winner!</p>";
```

```
24     }
25     else
26     {
27         echo "<p>Sorry, you didn't win. Let's keep trying.</p>";
28     }
29 }
30 echo "<p>The end</p>";
31
32 ?>
33 </body>
34 </html>
```

## Exercises

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1. Write a script that counts from 1 to 10 in steps of 1. For each number, display whether that number is an odd or even number.
2. Use a for loop to display numbers 1 through to 5
3. Modify the page so that the numbers are displayed from 5 down to 1
4. Modify the page so that you are displaying even numbers between 0 and 10
5. Repeat the above exercises but this time use the while loop